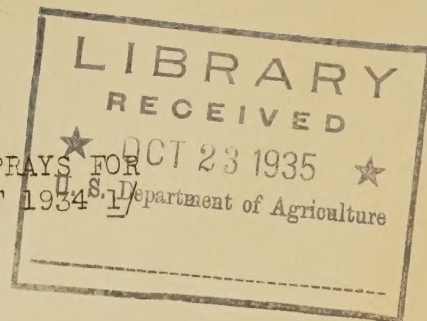


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ABSTRACT

SUBSTITUTES FOR ARSENATE OF LEAD USED AS SPRAYS FOR
CODLING MOTH CONTROL DURING THE SEASON OF 1934 ¹/₁ Department of Agriculture



By

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Manganar, a French synthetic cryolite and the natural cryolites - Kryocide and Kalo - were the chemicals used as sprays in codling moth control during 1934. These were compared with astringent lead arsenate spray for control purposes. Jonathan was the variety of apple trees to which the sprays were applied.

Of the cryolites, only the French synthetic cryolite was tested during the first brood of the codling moth. This material was used without oil throughout the season on one row of trees. Kolofog, a fungicide, was used with the French synthetic cryolite on one row for the first three cover sprays early in the season, but foliage and fruit burning resulted. The fungicide was then omitted and the French cryolite and water only were used in this test the remainder of the season. The other cryolite tests in which a summer oil was used, including the French synthetic cryolite, Kryocide, and Kalo, were started as soon as fungicides could be discontinued, or with the fourth cover spray on June 23.

The Manganar mixed with equal parts of lime to prevent burning of foliage and fruit, and with a summer oil as a sticker, was used all season on one row of trees. The sprays were timed by use of bait traps.

Each of the materials was applied to a row of 10 trees, but, when resets and lack of a bushel yield were taken into consideration, records had to be based on a 6 tree row for each material tested.

The cryolites gave slightly better control than did astringent lead arsenate and Manganar. The incompatibility of the cryolites and summer oil in the lime and fungicides limits their use to the latter part of the spray season.

From July 15 to August 15, the extremely high temperatures reduced codling moth injury. During this interval it was difficult to find eggs and many of those present failed to hatch. Insect damage was confined to the shaded areas in the trees and to areas in the orchards sheltered from hot winds due to favorable land contours.

1/ This material was inadvertently omitted from the mimeographed statement distributed by the Bureau of Entomology and Plant Quarantine Jan. 15, 1935 under the title "Results of Codling Moth Investigations, 1934." B.A.P.

CODLING MOTH SPRAY SCHEDULE FOR 1934*, THE TREATMENT GIVEN THE VARIOUS TEST BLOCKS
IN THE BLAIR EXPERIMENTAL ORCHARD, AND THE PERCENTAGE OF WORMY FRUIT AT HARVEST TIME.

Amount of Spray Materials in Pounds to 100 Gallons of Liquid.

Suggested dates for spraying	Date sprayed	Astringent lead arsenate	French synthetic cryolite + fungicide	Kryocide + $\frac{1}{2}$ gal. Verdol.	French synthetic cryolite + $\frac{1}{2}$ gal. Verdol	Kalo + $\frac{1}{2}$ gal. Verdol.	Manganar + $\frac{1}{4}$ lb lime + $\frac{1}{2}$ gal. Verdol.
Calyx	May 4	4	4 L.ars.**	4 L.ars.	4 L. ars.	4 L.ars.	4 L.ars.
1st cover (May 17)	May 15	4	4+1 K-Fog**	" "	" "	" "	4 Man** 1K- Fog.
2nd cover (May 25)	May 26	4	" " "	" "	" "	" "	" " "
3rd cover (June 2)	June 4	4	" " "	" "	" "	" "	" " "
4th cover (June 18)	June 23	4	" " "	4 Kryo**	4 synth.**	4 Kalo**	4 Man.+ oil
5th cover (June 29)	July 2	4	4 Synth.+ water	" "	" "	" "	" " "
6th cover (July 10)	July 14	4	" " "	" "	" "	" "	" " "
7th cover (July 22)	Aug. 6	4	" " "	" "	" "	" "	" " "
8th cover (Aug. 6)	" 22	4	" " "	" "	" "	" "	" " "
9th cover (Aug. 19)							
Percent wormy fruit at harvest time		4.33	7.03	3.37	3.27	3.99	4.72

*Codling moth bait traps were used to indicate the greatest number of adult moths in the orchards.

**L. ars. = Lead arsenate
K-Fog. = Kolofog
Kryo. = Kryocide

Synth. = French synthetic cryolite
Man. = Manganar

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